

# SPECIFICATION

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## *Vacuum thermoformed plastic shapes for hat making having integral crown and brim*

### **Background of Invention**

- [0001] For many centuries milliners and hatters have employed heavy wooden forms (hat blocks) for hand shaping fiber into felt hats. For hand felting, wooden hat blocks are strong and durable, temporarily withstanding the hot steamy conditions of normal hand felting. They have the negative characteristics of being heavy, expensive to produce and to ship, clumsy to handle, short lived, space consuming while not in use, and can stain lighter colored fibers with wood extracts during steaming. The this invention performs the functions of a wooden hat block but avoids all of the above negative characteristics of wooden hat blocks.
- [0002] The prior art with respect to this invention is believed to be fairly represented by the following U.S. Pat. Nos. 1,361,658; 1,630,803; 1,506,414; 1,650,571; 1,720,602; 1,888,375; 1,914,864; 1,931,688; 1,949,828; 1,976,711; 2,142,554; 2,281,546; While as a group, these patents relate to the general subject matter of hat blocking, only two of these, namely, U.S. Pat. No. 1,931,688 and U.S. Pat. No 4,113,154, appears to be pertinent to the concept of a low cost thermoformed hat blocking apparatus. Even so, while the end result produced by the hat block depicted by U.S. Pat. No. 1,931,688 and U.S. Pat. No. 4,113,154 may be similar to the end result produced by the subject invention, the means by which such end result is achieved are wholly different. Accordingly, one of the objects of the invention is to provide an affordable hat blocking structure that is inexpensively produced from a single piece of vacuum thermoformable sheet, one crown style to another and one brim style to another to provide a wide range of style choices. Another object is to provide a hat blocking structure that is simple and easy to use. Still another object of the invention is the provision of a hat blocking structure which itself provides visual confirmation to a customer of the ultimate style of hat crown and brim. The invention possesses other objects and advantages, some of which, with the foregoing, will be apparent from the following summary, description and drawings.

## Summary of Invention

[0003] In terms of broad inclusion, the thermoformed hat blocking structure of the invention comprises means for use to shape the uncompleted and normally unshaped or unblocked hand made hat so as to impart to the hat the shape of the blocking structure. Most hand made hats are fabricated from appropriate fibers, some being "felt" type hats, others being fabric, while others are formed from straw-type materials, paper or silk. All fiber and straw-type hats are susceptible to shaping into desirable styles by applying hot steam to the fibrous mass forming the hat until the fibers have softened and lost their "memory". Once this softening or loss of memory of the fibers has occurred, one conventional method of shaping the hats is to mold them by hand into the shape desired. With respect to sizing of the inner periphery of the brim and crown of a hat, this is conventionally carried out on appropriate apparatus that supports the mass of fiber until the desired shape has been obtained. So far as known, there is no apparatus that simultaneously permits shaping of the crown and brim, and which is formed from a single piece of thermo-formed sheet.

## Brief Description of Drawings

- [0004] FIG. 1 is an exploded cross section side elevation view of the crown and brim mold structures used in preparation of the invention.
- [0005] FIG. 2 is a side cross section elevation view of the hat blocking structure of the invention thermoformed over the combined crown and brim mold structures.
- [0006] FIG. 3 is a perspective view of a finished hat blocking structure.
- [0007] FIG. 4 is a perspective view of a finished hat blocking structure in use draped with pre-felted fiber batt.
- [0008] FIG. 5 is a perspective view of a hat blocking structure of the invention being used to form a felt-type hat from wool batt.

## Detailed Description

- [0009] Referring to FIG. 1, there is there shown, designated generally by the numeral 1, an unformed thermo-formable sheet that is to become the structure of the invention upon being vacuum thermoformed over the combined three dimensional positive crown and brim mold structures 2 and 3 upon the vacuum platen structure 4 of a thermoforming apparatus. The tubular channels designated as structure 5 provide avenues for vacuum to pull the softened

thermo-formable sheet into low recesses of the mold structures.

- [0010] Referring to FIG. 2, there is there shown, designated generally by the numeral 6, a formed hat shaped blocking structure of the invention having been vacuum thermoformed over one of a specific crown and brim three dimensional positive mold structure combination 2 and 3 upon the vacuum platen 4 of a thermoforming apparatus.
- [0011] The crown and brim mold structures are fashioned such that their mating surfaces match, leaving substantially little or no gap between them when positioned in a stacked hat like configuration. Both the crown portion and the brim portion of the hat-shaped blocking structure are provided with generally ovate walls 6 tapering upwardly to merge smoothly with the top surface 7. As illustrated in FIG. 2 the two opposite sides of the ovate walls 6 are depressed toward each other to produce a generally tapered structure narrowing as it moves upward. This tapering allows for easy removal of the three dimensional mold structures from beneath the finished one-piece thermoformed blocking structure of the invention. When liberated from the mold structures the finished hat-shaped blocking structure is substantially hollow, light weight, and stackable.
- [0012] Referring to FIG. 3, there is there shown, designated generally by the numeral 8, a finished hat shaped blocking structure of the invention having been liberated from the crown and brim mold structures and ready for use in blocking hats.
- [0013] Thus, as illustrated in FIG. 4, in use the hat-shaped blocking structure which includes the integral crown portion and the brim portion is appropriately supported on a flat surface such as a table top 9 to firmly support the hat-shaped blocking structure. An unblocked or unshaped hat 10 is then draped over the blocking structure 11. In the case of FIG. 4, the unformed hat is a fiber batt used for making a felt-type hat. Referring to FIG. 5, the unshaped hat (in this instance, wool batt) draped over the hat-shaped blocking structure is subjected to the application of manual pressure and friction with moisture 12, surfactant, and/or hot steam 13. It will be seen that as soon as sufficient moist heat, friction, and manual pressure has been applied to the hat, the crown of the hat may be molded by hand so that it conforms exactly to the depression formed in the top surface of the crown portion of the blocking structure, while the sides of the crown may be depressed to fill the depressions 14 formed in the ovate walls 15. In like manner, the brim of the hat may be molded so that it conforms to the configuration of the upper surface of the brim support portion 16. Once the desired style has been achieved by

causing conformation of the hat to the shape of the hat-shaped blocking structure, the heat is removed and the hat is permitted to dry and cool while remaining on the hat-shaped blocking structure. The finished hat shape can then be trimmed to remove excess material and provide the desired hat shape. A hat stiffening agent may be applied in order to permanently maintain the desired hat shape.